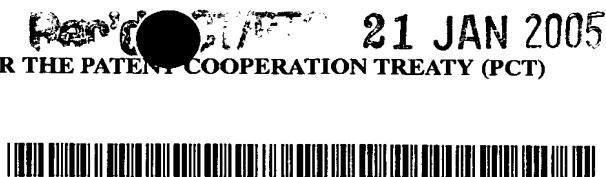


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(71) Applicant (for all designated States except US): KONIN-
KLIJKE PHILIPS ELECTRONICS N.V. [NL/NL];
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventor; and

(75) Inventor/Applicant (for US only): VAN CASTEREN,
Dolf, H., J. [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA
Eindhoven (NL).

(74) Agent: DUSSELDORP, Jan, C.; Internationaal Oc-
trooibureau B.V., Prof. Holstlaan 6, NL-5656 AA
Eindhoven (NL).

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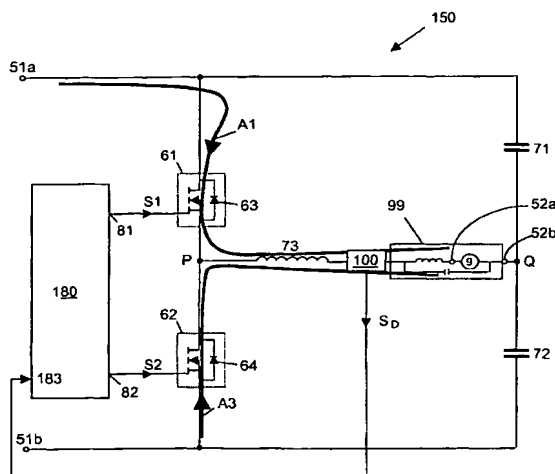
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Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted
a patent (Rule 4.17(ii)) for the following designations AE,
AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,
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[Continued on next page]

(54) Title: DRIVER FOR A GAS DISCHARGE LAMP



(57) Abstract: Driver (150) for a gas discharge lamp (9) comprises: an arrangement of two MOSFET switches (61, 62) connected in series between two input terminals (51a, 51b); an inductor (73) connected in series with said lamp (9), this series arrangement being coupled to a node (P) between said two switches; a control unit (180) providing control signals (S1, S2) to said two switches. During a first commutation interval (41), a lamp circuit current (ILC) has only a first direction while during a second commutation interval (42) said lamp circuit current has only an opposite direction. In each commutation interval (41, 42), during a first operational phase (43) said lamp circuit current has a continuously increasing level while during a second operational phase (44) said lamp circuit current has a continuously decreasing level. The control unit (180) is designed to generate its control signals (S1, S2) such that said two switches are always, switched substantially simultaneously in counter-phase. The mosfets are used in reverse conduction mode also, to avoid body diode conduction (synchronous rectification).



KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H05B H03K G01R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 932 976 A (UCHIHASHI KIYOAKI ET AL) 3 August 1999 (1999-08-03) figures 6-8	1-3
X	US 5 917 290 A (SCHLECHT MARTIN FREDERICK ET AL) 29 June 1999 (1999-06-29) column 9, line 47 - column 12, line 17; figures 6,13	1-7
A	JP 2001 284087 A (MATSUSHITA ELECTRIC WORKS LTD) 12 October 2001 (2001-10-12) figures 11-13	1-8

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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- "&" document member of the same patent family

Date of the actual completion of the international search

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European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Maicas, J

INTERNATIONAL SEARCH REPORT

International Application No

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5932976	A	03-08-1999	CA 2224300 A1	14-07-1998
			JP 10284265 A	23-10-1998

US 5917290	A	29-06-1999	AT 261234 T	15-03-2004
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			JP 2001513253 T	28-08-2001
			TW 467465 Y	01-12-2001

JP 2001284087	A	12-10-2001	NONE	

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-8

Driver for a gas discharge lamp comprising:

- input terminals;
- output terminals;
- two controlable switches (forming a bridge);
- an inductor;
- a control unit design to generate the control signals for the switches so that they are always switched substantially in counter phase and at low and high frequency operational phases.

2. claims: 9-19

A zero current crossing detector comprising a transformer being designed to be magnetically saturated at very low current levels.

INTERNATIONAL SEARCH REPORT

PCT/IB 03/03013

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-8

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.